WHAT IS CLAIMED:

1. A color imaging system for compensating a color response, the system comprising:

an array of pixel sensor elements;

a color filter including a plurality of color filter components organized in a predefined pattern, the color filter overlaying at least a portion of the array, wherein said pixel sensor elements include at least one element associated with a first color filter component, at least one element associated with a second color filter component, and at least one element associated with a third color filter component;

a first analog compensation unit coupled to the at least one element associated with the first color filter component, said first analog compensation unit adapted to modify a readout of the at least one element associated with the first color filter component;

a second analog compensation unit coupled to the at least one element associated with the second color filter component, said second analog compensation unit adapted to modify a readout of the at least one element associated with the second color filter component;

a third analog compensation unit coupled to the at least one element associated with the third color filter component, said third analog compensation unit adapted to modify a readout of the at least one element associated with the third color filter component; and

an array controller adapted to control the readout of the elements associated with the first, second and third color components.

2. The system of Claim 1, further comprising:

a comparator circuit adapted to compare an address of a pixel sensor element currently being read by the array controller with a stored list of defective pixel sensor addresses; and

at least one delay element for storing at least one previous analog pixel value read by the array controller, wherein if the address of the current pixel

sensor element matches a defective pixel address in the stored list, the array controller reads the previous analog pixel value.

3. The system of Claim 1, wherein at least a portion of the array elements arranged in a plurality of rows and columns.

4. The system of Claim 1, wherein the array controller is adapted to control the readout of a plurality of pixel sensor elements in parallel.

5. The system of Claim 1, further comprising:

a first analog line storage unit, the first analog line storage unit being adapted to store a first line readout from the array; and

a second analog line storage unit, the second analog line storage unit being adapted to store a third line readout from the array, wherein the array controller averages a second consecutive line readout from the array with the first line readout stored in the first analog line storage unit to produce a first red-green-blue (RGB) triplet, the array controller averaging a fourth consecutive line readout from the array with the third line readout stored in the second analog line storage unit to produce a second RGB triplet.

6. The system of Claim 1, wherein the analog compensation units are gain amplifiers.

7. The system of Claim 1, wherein the analog compensation units are programmable gain amplifiers.

8. The system of Claim 7, wherein the programmable gain amplifiers are implemented as a separate stage.

9. The system of Claim 7, wherein the programmable gain amplifiers are contained within a pixel circuitry of the array.

10. The system of Claim 7, wherein the programmable gain amplifiers are within a plurality of column buffers.

11. The system of Claim 1, further comprising a fourth analog compensation unit, wherein the second analog compensation unit is coupled to a set of even-numbered rows of elements associated with the second color component, and the fourth analog compensation unit is coupled to a set of odd-numbered rows of the elements associated with the second color filter component.

12. The system of Claim 1, wherein the color filter components include the colors of red, blue and green.

13. The system of Claim 1, wherein the array controller causes an independent readout for a set of even-numbered rows and an independent readout for a set of odd-numbered rows to control color compensation for each color component.

14. The system of Claim 1, wherein the array controller causes an independent readout for even-numbered columns and an independent readout for odd-numbered columns to control color compensation of each color component.

15. The system of Claim 1, wherein the array controller causes a plurality of substantially simultaneous, independent readouts for a plurality of rows and some columns.

16. The system of Claim 1, wherein the pixel sensor elements form a portion of a charge coupled device.

17. The system of Claim 1, wherein the pixel sensor elements form a portion of a complementary metal oxide semiconductor device.

18. The system of Claim 1, wherein at least a portion of the pixel sensor elements are active.

19. The system of Claim 1, wherein at least a portion of the pixel sensor elements are passive.

20. The system of Claim 1, wherein at least a first pixel sensor element is associated with a different color filter component than a second, neighboring pixel sensor element.

21. The system of Claim 1, wherein the predefined pattern is a Bayer color configuration.

22. The system of Claim 1, wherein the predefined pattern comprises the colors of yellow, cyan and magenta.

23. The system of Claim 1, further comprising a micro-lenses layer.

24. A color imaging system with white balance for compensating a color response, the system comprising:

an array of pixel sensor elements;

a color filter including a plurality of color filter components organized in a predefined pattern, the color filter overlaying at least a portion of the array, wherein said elements include at least one element associated with a first color filter component and at least one element associated with a second color filter component;

a first set of analog compensation units coupled to the at least one element associated with the first color filter component, said first set of analog compensation units adapted to modify a readout of the at least one element associated with the first color filter component;

a second set of analog compensation units coupled to the at least one element associated with the second color filter component, said second set of analog compensation units adapted to modify a readout of the at least one element associated with the second color filter component;

a first summing amplifier summing an output from the first set of analog compensation units and an output from the second set of analog compensation units to produce a compensated readout for the first color filter component;

a second summing amplifier summing an output from the first set of analog compensation units and an output from the second set of analog compensation units to produce a compensated readout for the second color filter component; and

an array controller adapted to control the readout of the elements associated with the first and second color components.

25. The system of Claim 24, wherein the analog compensation units are gain amplifiers.

26. A method of compensating a color response in an analog domain of an array of pixel sensor elements, the method comprising:

amplifying an analog output from a plurality of elements of a first color component;

amplifying an analog output from a plurality of elements of a second color component; and

generating a compensated analog readout of the plurality of elements of the first color component.

27. The method of Claim 26, further comprising:

comparing an address of a pixel sensor element currently being read by a readout control circuit with a stored list of defective pixel sensor addresses; and

storing at least one previous analog pixel value read by the readout control circuit, wherein if the address of the current pixel sensor element matches a defective pixel address in the stored list, the readout control circuit reads the previous analog pixel value.

28. The method of Claim 26, wherein the act of generating a compensated analog readout comprises amplifying the analog readout for the plurality of elements of the first color component with a first programmable gain amplifier.

29. The method of Claim 26, further comprising determining an optimal level of color compensation for the analog readout of the plurality of elements of the first color component.

30. The method of Claim 26, wherein generating a compensated analog readout depends on a temperature of the system.

31. The method of Claim 26, wherein the pixel sensor elements are associated with the colors of red, blue and green.

32. The method of Claim 31, wherein the array of pixel sensor elements is arranged in a plurality of rows and columns and the act of generating comprises:

generating an independent readout for even-numbered rows;

generating an independent readout for odd-numbered rows;

generating an independent readout for even-numbered columns; and

generating an independent readout for odd-numbered columns, such that at least one element associated with a red filter component is coupled to a first programmable gain amplifier, at least one element associated with a blue filter component is coupled to a second programmable gain amplifier, and at least one element associated with a green filter component is coupled to a third programmable gain amplifier.

33. The method of Claim 26, wherein the act of generating comprises generating a plurality of substantially simultaneous, independent readouts for the set of rows and the set of columns.

34. A method of compensating a color response with white balance in an analog domain of an array of pixel sensor elements, the method comprising:

amplifying an analog output from an element of a first color component to produce a first amplified color output and second amplified color output;

amplifying an analog output from an element of a second color component to produce a third amplified color output and a fourth amplified color output;

generating a compensated analog readout of the first color component based on a combination of the first amplified color output and the third amplified color output; and

generating a compensated analog readout of the second color component based on a combination of the second amplified color output and the fourth amplified color output.

35. A color imager comprising:

a set of sensor elements, wherein at least one of said elements is associated with a first color, at least one of said elements is associated with a second color, and at least one of said elements is associated with a third color;

a first amplifier configured to compensate for said first color;

a second amplifier configured to compensate for said second color;

a third amplifier configured to compensate for said third color; and

an array controller which selectively couples elements associated with the first color to the first amplifier, said array controller selectively couples elements associated with the second color to the second amplifier, and said array controller selectively couples elements associated with the first third color to the third amplifier.

36. The color imager of Claim 35, wherein the sensor elements are arranged in rows and columns.

37. The color imager of Claim 35, wherein at least four of said elements in one or more columns are selectively coupled to four respective independent gain amplifiers.

38. The color imager of Claim 35, wherein at least four of said elements in one or more rows are selectively coupled to four respective independent gain amplifiers.

39. A method of interpolating a color value in the analog domain in real-time, comprising:

modifying a first analog signal corresponding to the output of a first pixel element in an imager to color correct the first pixel, the first pixel element used to sense light intensity of a first color; and

modifying a second analog signal corresponding to the output of a second pixel element in the imager to color correct the second pixel, wherein the second pixel element is used to sense light intensity of a second color.

40. The method as defined in Claim 39, further comprising modifying a third analog signal corresponding to the output of a third pixel element in the imager to color correct the third pixel.